

Example 2

Write the point-slope form of an equation of the line passing through the given points.

a) $(-3, 6), (-5, 9)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{9 - 6}{-5 - (-3)} = \frac{3}{-2} = -\frac{3}{2}$$

$$y - y_1 = m(x - x_1)$$

$$y - 6 = -\frac{3}{2}(x + 3)$$

-OR-

$$y - 9 = -\frac{3}{2}(x - 5)$$

b) $(14, 3), (-11, 3)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 3}{-11 - 14} = \frac{0}{-25} = 0$$

$$y - y_1 = m(x - x_1)$$

$$y - 3 = 0 \cdot (x - 14)$$

$$y - 3 = 0$$

c) $(3\frac{1}{2}, 5\frac{1}{4}), (2\frac{1}{2}, 6)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{6 - \frac{21}{4}}{\frac{5}{2} - \frac{3}{2}} = \frac{\frac{24}{4} - \frac{21}{4}}{\frac{2}{2}} = \frac{\frac{3}{4}}{1} = \frac{3}{4}$$

$$y - y_1 = m(x - x_1)$$

$$y - \frac{21}{4} = \frac{3}{4}(x - \frac{3}{2})$$

Example 3

$$y - y_1 = m(x - x_1)$$

Give the slope of each line and name a point on the line.

a) $y_1 = 4, x_1 = -1$

$$y - 4 = -3(x + 1)$$

$$m = -3 \quad (-1, 4)$$

b) $y - (-6) = \frac{1}{4}(x - 8)$

$$y + 6 = \frac{1}{4}(x - 8)$$

$$m = \frac{1}{4} \quad (8, -6)$$

c) $y - 0 = -\frac{1}{2}(x - (-9))$

$$y = -\frac{1}{2}(x + 9)$$

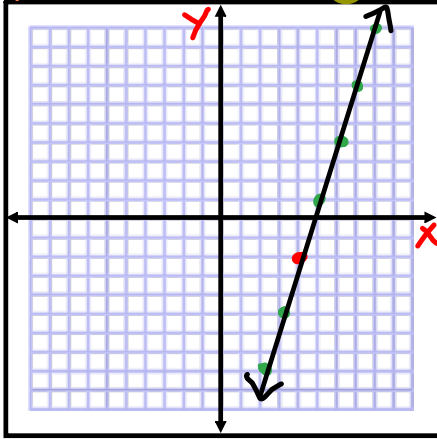
$$m = -\frac{1}{2} \quad (-9, 0)$$

Example 4

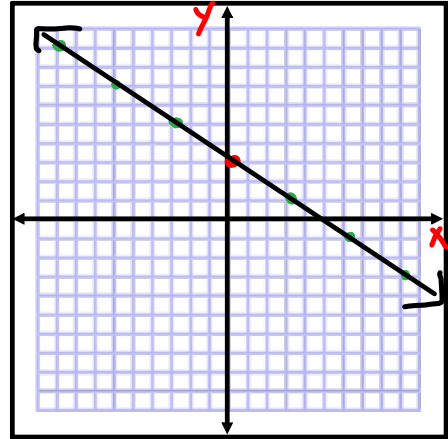
Graph the equations below.

$$a) y + 2 = 3(x - 4) \quad m = \frac{3}{1} \quad (4, -2) \quad \text{start}$$

$$y - (-2) = 3(x - 4)$$



$$b) y - 3 = -\frac{2}{3}(x - 0) \quad m = -\frac{2}{3} \quad (0, 3)$$

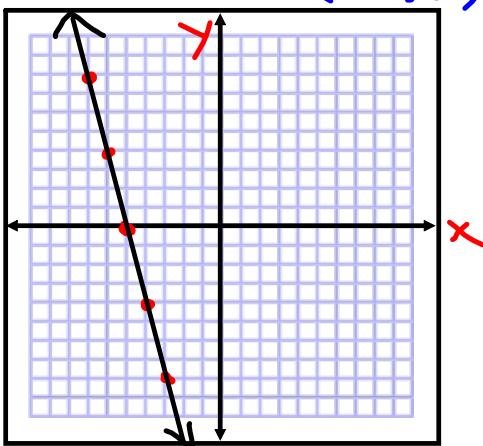


Example 4 (continued)

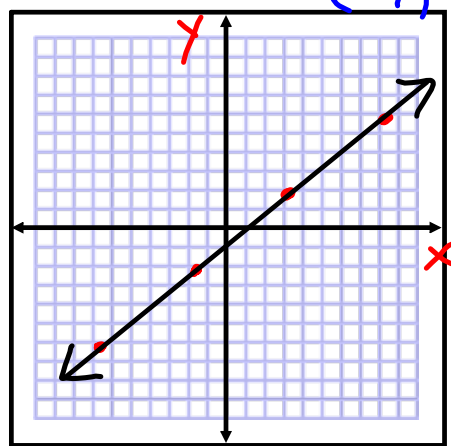
Graph the equations below.

$$c) y - 0 = -4(x - 5) \quad m = -\frac{4}{1} \quad (-5, 0)$$

$$y = -4(x + 5)$$



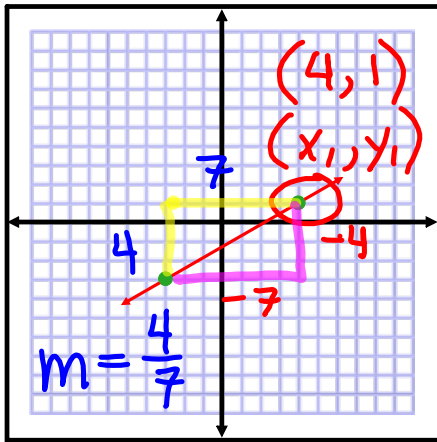
$$d) y + 6 = \frac{4}{5}(x + 7) \quad m = \frac{4}{5} \quad (-7, -6)$$



Example 5

Write an equation in point-slope form of the lines graphed below (use the right hand point).

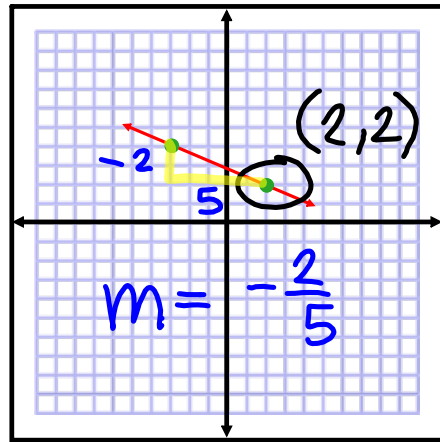
a)



$$y - y_1 = m(x - x_1)$$

$$y - 1 = \frac{4}{7}(x - 4)$$

b)



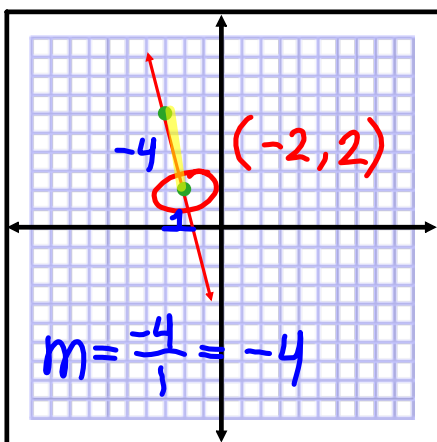
$$y - y_1 = m(x - x_1)$$

$$y - 2 = -\frac{2}{5}(x - 2)$$

Example 5 (continued)

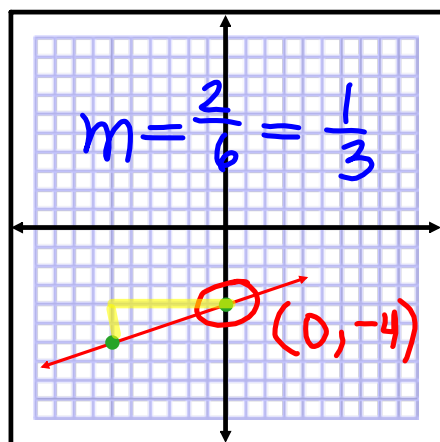
Write an equation in point-slope form of the lines graphed below (use the right hand point).

c)



$$y - 2 = -4(x - (-2))$$

d)



$$y - 4 = \frac{1}{3}(x - 0)$$

or

$$y + 4 = \frac{1}{3}x$$